

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

1-13. (canceled).

14. (currently amended): A method of manufacturing a piezoelectric vibrator unit, comprising the steps of:

(a) preparing a green sheet made of a piezoelectric material and in which through holes are opened in at least one of a first region thereof which is to be a vibrating region of the piezoelectric vibrator and a second region thereof which is to be a non-vibrating region of the piezoelectric vibrator;

(b) forming a first conductive material layer to be a segment electrode on the first region of the green sheet and a second conductive material layer to be a common electrode on the second region of the green sheet, such that a gapnon-conductive region having no conductive material is formed between the first conductive material layer and the second conductive material layer, and such that the through holes are filled with a conductive material of at least one of the first conductive material layer and the second conductive material layer;

(c) repeating step (a) to prepare another green sheet having a first region and a second region, and laminating the obtainedanother green sheet on the first conductive material layer and

the second conductive material layer such that the gap non-conductive region is filled-covered with the piezoelectric material of the another green sheet;

(d) repeating step (b) to form a first conductive material layer, a second conductive material layer and a non-conductive region on the another green sheet;

(e) repeating the steps (b) and (a) through (ed) to stack a required number of layers;

(ef) baking the above-stacked layers to form a single piezoelectric material diaphragm;

and

(fg) forming slits on the piezoelectric material diaphragm so as to elongate to an area where at least the first conductive layers are separated from each other to constitute piezoelectric vibrators.

15. (canceled).

16. (currently amended): The method of manufacturing a piezoelectric vibrator unit as set forth in claim 14, wherein the through holes are opened so as to coincide with an arrangement pitch of the piezoelectric vibrators.

17. (canceled).

18. (currently amended) The method of manufacturing a piezoelectric vibrator unit as set forth in claim 14, wherein the slits are formed so as to coincide with an arrangement pitch of through holes formed in one end portion which is to be a free end of the piezoelectric vibrator.

19.-20. (canceled).

21. (previously presented): The method of manufacturing according to claim 14, wherein the through holes in adjacent layers are formed to be slightly offset from each other in an axial direction, such that the through holes of alternate layers are positioned in one line.

22. (canceled).

23. (previously presented): The method of manufacturing according to claim 14, wherein a width of the through holes is formed to be larger than a thickness of the respective green sheet.

24. (canceled).

25. (withdrawn): A method of manufacturing a piezoelectric vibrator unit including a plurality of piezoelectric vibrators, comprising:

(a) preparing a green sheet in which through holes are arranged in a first direction and in a vicinity of at least one of both ends of the green sheet in a second direction perpendicular to the first direction;

(b) forming a conductive material layer on the green sheet such that a first conductive region and a second conductive region are formed while defining a non-conductive region

therebetween so as to avoid the through holes, and such that the through holes are filled with a conductive material;

- (c) repeating the step (a) and the step (b) to form a lamination body in which a required number of green sheets and conductive material layers are laminated;
- (d) baking the lamination body to form a single piezoelectric material diaphragm; and
- (e) forming slits on the piezoelectric material diaphragm so as to avoid the through holes, and to traverse at least the first conductive region in each conductive material layer in the second direction, so that the first conductive region is divided into a plurality of divided conductive regions by the slits,

wherein each of the divided conductive regions is to be a segment internal electrode of the piezoelectric vibrator unit, and the second conductive region in each conductive material layer is to be a common electrode of the piezoelectric vibrator unit.

26. (withdrawn): The manufacturing method as set forth in claim 25, wherein the through holes are arranged at a fixed pitch identical with an arrangement pitch of the piezoelectric vibrators.

27. (withdrawn): The manufacturing method as set forth in claim 25, further comprising fixing an end portion of the piezoelectric material diaphragm, in which the second conductive region is formed, on a fixing substrate before the slits are formed.

28. (withdrawn): The method of manufacturing according to claim 25, wherein the through holes in adjacent layers are formed to be slightly offset from each other in an axial direction, such that the through holes of alternate layers are positioned in one line.

29. (withdrawn): The method of manufacturing according to claim 25, wherein a width of the through holes is formed to be larger than a thickness of the respective green sheet.

30 (previously presented): The method of manufacturing a piezoelectric vibrator unit according to claim 14, wherein the slits on the piezoelectric material diaphragm are formed so as to avoid the through holes.

31. (currently amended): The method of manufacturing a piezoelectric vibrator unit according to claim 14, wherein the gap non-conductive region is formed in an area which is nearer to a center portion of the green sheet than the through holes.

32.-33. (canceled).